

# HOSHIN KANRI – WESTERN MANAGEMENT INSIGHTS ON CONTENT AND PROCESS

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## **Abstract**

*The dynamic environment and the constant demand to be globally competitive require companies to focus closely on their management of internal resources. One of the systemic approaches towards improvements in internal resources is the implementation of lean. The Toyota Production System introduced lean which later widespread across western production systems. The Hoshin Kanri tool, a strategic aspect of the lean approach is still not so common in the practice of western management systems.*

*The reason for not using Hoshin Kanri may be in the non-understanding of the embedded cultural elements of lean. In this paper, we propose two insights into Hoshin Kanri based on its implementation in western business environments. The first one is founded on the content of Hoshin Kanri, and the second on the soft principles guiding the process itself. Both of them are developed in combination with the theoretical background found in the literature and expertise in implementing Hoshin Kanri in companies. We provide insight for the example of a Hoshin Kanri implementation in a company through two crucial graphic representations: PDCA with Catchball and X- matrix. The stages of the strategic management process are set up on the PDCA principle. Contrary to the classic approach, a pre-phase is suggested for companies implementing Hoshin Kanri for the first time. Others suggest to start with the C – check phase. Plan is the most complex phase. One of the ways to present all the activities to strategic objectives, annual goals, activities, management by name in charge of these activities, indicators, timetable and status is an X-matrix. It is a complex but very helpful way to present, usually overwhelming, strategic activities in the company. Catchball is used to enable communication between everyone engaged in shaping and implementing the strategy at all organizational levels in search for the optimal plans and realistic goals in the company.*

*In this paper, we shared the insights on transparency, flexibility and communication as the three most important soft principles in the process. These three elements answer the call of western strategic management, both practice and theory, for a more open strategic process with higher level of engagement of all employees and a system of knowledge sharing fostering a culture of sharing and caring.*

**Keywords:** lean, Hoshin Kanri, strategy

**JEL classification:** L10, L11, L15, M11

## **Introduction**

The accelerated business dynamics, the necessity of rapid adaptation to macroeconomic developments, and the increasing global competitiveness require companies to have excellent business performance. In order to achieve world-class performances and make the most of their internal competitive resources, companies need a systematic approach to improvements and thus apply a variety of methodologies leading to improvement.

According to some authors, lean methodology is recognized as the most popular methodology for improvements in the production sector (Jain & Lyons, 2009; Jasti & Kodali, 2015; Prabhushankar et al., 2015; Sony, 2018). Its popularity is also growing in the service sector (Cheng et al., 2015; Resta et al., 2015). Lean's potential is large, but the level of successful lean implementation, that is the achievement of lean transformation of companies, is not satisfactory (Bortolotti et al., 2015; Yadav et al., 2017).

The research in this area, in most cases, focuses on the lean principles, philosophy, methods and processes and rarely discusses the strategic perspective of the entire process (Bortolotti et al., 2015; Shah & Ward, 2003, 2007). Since the lean principle addresses a front-line approach to changes and innovation, the strategic component of the whole process is not so widespread, neither in practice nor in research (Bhasin & Burcher, 2006; Cortes et al., 2016). The aim of this paper is to elaborate on the strategic perspective of the successful implementation of the lean approach. We would like to present the insights on the content of the Hoshin Kanri implementation by explaining the two crucial graphic representations: the PDCA with Catchball and the X-matrix. The second aim is to provide and discuss insights about the three guiding principles, as a soft side that could help the Hoshin Kanri implementation process. Western managers do not use Hoshin Kanri for strategy planning and implementation and this paper helps them in understanding the three soft essences of Hoshin Kanri.

The structure of this paper first provides a theoretical background of lean and Hoshin Kanri and continues with more specific insights into their implementation. Hoshin Kanri and lean are grounded in practice, therefore the insights for implementations, specifically for western managers, follow two sets of recommendations: ones on the content and ones on the process. Practical recommendations are based on the expertise in both the production and service sector of one of the co-authors. Experience gained in implementing lean and Hoshin Kanri in Croatian companies are presented in both graphical forms of Hoshin Kanri and give reflections on the process itself. Both groups of insights are embedded in the current stream of literature on Hoshin Kanri and lean.

## **Lean**

Lean management, as a managerial tool used in production, appeared in the early 1990s. Greatly supported by Taiichi Ohno (Ohno, 1988), the idea of lean management spread through the business world very quickly. It is one of the key underlying ideas promoted by the Toyota Production System (TPS). The main idea is that a business, while making a product, also creates waste and production inconsistencies. The increasing customer demand lead to the need for a focused production that would create greater value at lower costs. One of the practices that makes this possible is lean management. The main goal of lean production is to create a product with no waste. There are many tools and methods in lean management that one can implement in order to reduce waste in production such as the 5S, kaizen, PDCA etc.

Most of the papers on lean management in history have been very practical, describing plants and their way of doing business, and showing the thought process of lean through practical application (Abbasian-Hosseini et al., 2014; Jimmerson et al., 2005; Kumar et al., 2006). This is probably the reason why lean has been accepted as it is a concept that is not theoretically invented and popularized, but is a part of a business system that has been tested, proven and applicable in different production systems. It has a very practical component tightly related to productivity, efficiency and is in direct correlation with business profits (Mwelu et al., 2014). In this way it is well recognized and supported even today in every textbook and manual on quality (Goetsch & Davis, 2013; Jones, 2014). It is not just a management fad from the 80's; it still remains an important aspect of quality management because of the practical concepts and the possibility that it can, despite the other elements of TPS, be implemented separately into other systems. Some other quality management systems have taken the lead (e.g. ISO standards), and lean may not be the mainstream topic, but is still an inevitable topic for both teaching and training in quality management.

As for any theoretical concept, there is a variety of terms for *lean* used interchangeably. Some authors call it lean manufacturing (Jabbour et al., 2013), others lean production (Found & Harrison, 2012; Jeffers, 2010), or lean practices (Hong et al., 2012), lean management (Ioppolo et al., 2014; Martínez-Jurado & Moyano-Fuentes, 2014), lean operations (Taylor et al., 2013), lean thinking (Martínez León & Calvo-Amodio, 2017), lean system (Colicchia et al., 2017) while some simply prefer to name it just lean (Pampanelli et al., 2014). This combination of different terms all refer to the paradigm explaining waste elimination in organizations.

We made an effort to seek for different terms for lean. To shed light on the nuances between different terms (Pettersen, 2009), we provide a table (Table 1) with the different aspects of the lean paradigm, the authors that use it and the way they define it.

*Table 1: Different terms of lean*

Construct	Definition	Authors that use it
Lean manufacturing	manufacturing process whose main goal is to generate a minimum amount of waste; the production side of lean	Büyükožkan et al., 2015; Jabbour et al., 2013; Longoni & Cagliano, 2015; M.P. et al., 2017; Pakdil & Leonard, 2015; Pham & Thomas, 2011; Prasad et al., 2016...
Lean production (system)	a term that can be used interchangeably with lean manufacturing; application of the lean paradigm in the manufacturing industry	Azevedo et al., 2016; Bergenwall et al., 2012; Gelei et al., 2015; Glover et al., 2011; Kurilova-Palisaitiene et al., 2018; Pettersen, 2009
Lean practices	practices making up the lean concept	Susana G. Azevedo et al., 2012; Fahimnia et al., 2015; Hong et al., 2012
Lean management	changing of organizational policies (managerial level) in order to obtain better efficiency and quality production; lean at higher strategic levels (e.g. performance management, Kaizen)	Ioppolo et al., 2014; Martínez-Jurado & Moyano-Fuentes, 2014
Lean logistics	include just-in-time (JIT), product postponement and vendor managed inventory	Ugarte et al., 2016

Lean thinking	implies implementing lean as a culture in the business; strategic level of the firm	Caldera et al., 2017; Hines et al., 2004; Womack & Jones, 2003
Lean operations	operations/steps used in production that support the lean paradigm	Piercy & Rich, 2015; Taylor et al., 2013
Lean system	an entity that uses the lean methodology	Colicchia et al., 2017; Dhingra et al., 2014
Lean methods	tools that are used in lean, for example just-in-time (JIT), total productive maintenance (TPM), automation, value stream mapping (VSM) and kaizen/continuous improvement (CI)	Garza-Reyes et al., 2018
Lean philosophy	implies spreading lean culture in a business; the manner of producing and behaving in a lean company	Glover et al., 2013; Piercy & Rich, 2015
Lean program	similar to simply lean; refers to one of the best improvement programs for production systems inspired by TPS	Kurdve et al., 2014
Lean paradigm	entails waste elimination, total quality management (TQM) and just-in-time (JIT)	Ciccullo et al., 2018; Garza-Reyes et al., 2016
Lean construction	practicing lean in the construction sector	Abbasian-Hosseini et al., 2014; Saieg et al., 2018
Leanness	maturity level of lean	Maasouman & Demirli, 2016
Lean	includes all of the above	Cherrafi et al., 2017

*Source: made by authors using the sources in the table*

Lean has always been a concept joining forces with other concepts. For example, the most popular one is the Lean Six Sigma (Atmaca & Girenes, 2013; Zhang et al., 2012). Recently, the research on lean moved to a different research setting. Since lean is all about reducing waste, the recent research on lean has been refocused toward sustainable production through the triple bottom line (TBL). Following the tradition of TBL in line with Spreckley (Spreckley, 1987) and Elkington (Elkington, 1994), a company takes into consideration the social, economic and ecological aspects in every step they take. There are only several papers referring to the concepts of lean and sustainability through all triple bottom line levels (Bergenwall et al., 2012; Martínez-Jurado & Moyano-Fuentes, 2014; M.P. et al., 2017). Lean is in its nature focused on the economic aspect of the production system. Since lean is about waste reduction, it is assumed that it supports the green production as well. The majority of the works that discuss lean management in regards to sustainability, deal only with one part – the ecological sustainability - popular lean and green (Dües et al., 2013; Gupta et al., 2018; Prasad et al., 2016). The least discussed topic in terms of lean and sustainability is the social aspect (Dillard et al., 2012; Pakdil & Leonard, 2015; Taylor et al., 2013). Looking through the literature, we can conclude that the area of lean and green is widely explored whereas the area of lean and social sustainability is still overlooked and under-investigated.

## Hoshin Kanri

Hoshin Kanri is a system that shapes and implements a strategy, led by the development of the most powerful world production system – the TPS (Dennis, 2006). It is a part of the Japanese management system that implies a strategic management system transferring the vision and goals of a business across the organization (Hines, 2011: 36). The Hoshin Kanri allows the managers to achieve their strategic intentions. According to Akao (Akao, 2004), it consists of (1) enhancing and uniting the business's capabilities, (2) shaping of a common plan and policy as a yearly management plan based on the motto of the business and (3) carrying out operations employing the main resources (people, goods, money) and at the same time optimizing quality, quantity, costs and time of delivery. Other terms that are used are *policy deployment*, *Hoshin planning* and *management by policy*.

The concept of Hoshin Kanri is based on the principle in which the strongest organization is the one that uses the strength of its employees' creative thinking to become the greatest business organization in its field. This entails that every person in the organization is viewed as an expert at his workplace. At the same time, every person clearly understands the vision and goals of the organization.

Jackson (Jackson, 2006) states that at the heart of lean and the Lean Six Sigma lies the same operational system, the Hoshin Kanri. Hutchins (Hutchins, 2008) sees Hoshin Kanri as a strategic approach to continuous improvement which gives the setting to individual elements of Six Sigma or lean production. Wilson (Wilson, 2010) points out that the use of Hoshin Kanri is much more productive in the planning and accomplishment of goals in lean than the usual, common approaches. It is interesting how first-line employees can contribute to the development of strategy (Tegarden et al., 2005; Tonnessen & Gjefsen, 1999) and how communication and interaction works in line of innovation, elimination of waste and promotion of lean production (Worley & Doolen, 2006).

In spite of the value of Hoshin Kanri in practice, there are just a few scientific research papers addressing this topic. For example, de Silveira et al. (de Silveira et al. 2017) discuss Hoshin Kanri in view of its implementation, assumptions, use and structure. There is a case study example of using Hoshin Kanri in a company (Witcher, Butterworth, 1999), and the use of the Catchball process (Tennant, Roberts, 2001).

Hoshin Kanri allows for the shaping and the implementation of strategy in an organization, active participation of employees at all business levels in every stage of strategy control, and for continuous improvements and a continuous process of strategic management. The main methods of Hoshin Kanri include the well-known Deming's PDCA, Catchball process and X-matrix.

The catchball process cascades the strategic plans down the management hierarchy so that the PDCA cycles nest one within the other. The top management develops strategic plans by involving the middle management and the employees in the shaping and implementation of strategy. The result is strong self-control based on improved understanding and the acceptance of strategy by all. Hoshin Kanri demands that every manager and employee becomes an independent practitioner of PDCA, which calls for intensive education and training. Since every level of PDCA activity is interconnected, the change in one cycle will cause a change in all of the other cycles. There are some variations to the PDCA. Akao (Akao, 2004) mentions

that the PDCA is the heart of Hoshin Kanri and originally the PDCA began with C (control), thus becoming a CAPD cycle.

Catchball is the key method of Hoshin Kanri which represents a two-way communication process between everyone engaged in the shaping and implementing of strategy at all organizational levels, as the basis for development and setup of optimal plans and realistic goals and their implementation (Akao, 2004; Jackson, 2006; Kondo, 1998). The communication can go across all directions of organizational structure; top-down, bottom-up and horizontal. One of the prerequisites of smooth communication in all directions is the setup of cross functional management as another key factor of Hoshin Kanri. Practical use and realization of catchball depends on the size and structure of an organization. Catchball enhances worker motivation and develops optimal plans and realization.

*A3 plan* (Kesterson, 2015) is a tool (a set of documents) typically used in Hoshin Kanri in the formulation and planning of strategic, tactical and operational plans and problem solving. The creator of A3 plan is Toyota, and the term derives from the use of the A3 paper format, on which the plan is set. It represents a concise overview of continuous improvement ideas visually and in a standardized way. This standardized form allows planning but also enables clear plan communication on all levels of the organization. There are several types of A3 plans, described by Jackson (Jackson, 2006): A3-i (intelligence report), A3-X (X-matrix), A3-T (team charter), A3-SR (state review), A3-P (problem report), and A3-SSR (summary state report).

The Hoshin Kanri X-Matrix is a document presenting company's objectives, strategies, projects (initiatives) and people responsible for their realization. The matrix consists of four quadrants (Kesterson, 2015): long-term goals (strategic objectives) are written at the bottom, annual objectives to the left, top level priorities (activities to improve) at the top and metrics to the right. On the far right side there is a list of people responsible for each part of the plan and a timeline for delivering the plan. Depending on the company's needs and specifics, there could be some additional elements in the X-matrix.

There are also some recommendations of using Hoshin Kanri alongside the Balanced Score Card (BSC). For example, Manos (Manos, 2010) recommends the use of BSC to define the indicators (KPI) used in an X-matrix in order to direct the activities towards achievement of goals. Moreover, combining BSC and Hoshin Kanri leads to greater results in companies (DeBusk & DeBusk, 2011).

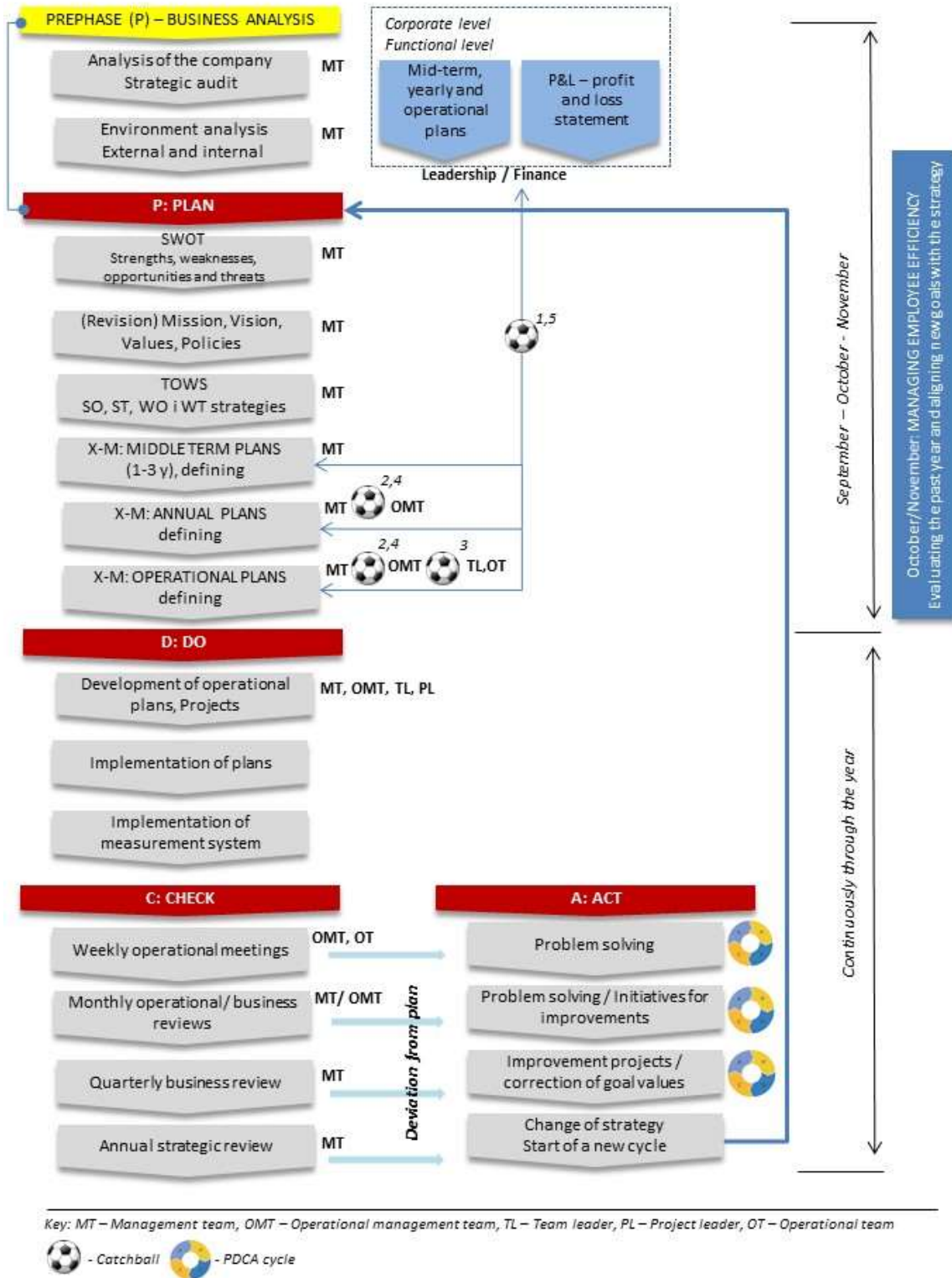
## **The insights into the content of Hoshin Kanri implementation**

In this section, we propose insights into the content of Hoshin Kanri implementation. The content is based on the practical use of Hoshin Kanri, the emphasis on its principles and characteristics, specifically PDCA, catchball and X-matrix. Deliberately, there is no data on the specific company or numbers. The stages of the strategic management process are set up on the PDCA cycle principle. The role of catchball is to communicate and coordinate between different hierarchical levels until the strategy is understood, improved and implemented.

The suggested time frame for analyzing and defining strategy is the last quarter of the ongoing year for the following one. Respecting this time frame allows the company to start the new yearly cycle with aligned and set strategic guidelines, activities and goals. It is important to

note that the annual employees' review as part of performance management is done at the end of year. It is optimal, during this conversation, to set individual goals for the coming year that are aligned with the strategic activities of the company.

Figure 1: PDCA in the process of developing strategy



*Source: Manos, 2010; Hutchins, 2008, p.10; Jackson, 2006, p. 2; Hines, 2011, p. 9; Wheelen and Hunger, 2012, p. 15 as cited in Lerner, 2019*

The remaining three phases, the DCA, run throughout the year. During the last quarter, it is time to estimate the annual business results and to establish a strategy which will allow for a timely start of the next PDCA cycle.

The **pre-phase** – analysis of the current state and business environment is deducted from the “P” phase. This is the initial analysis of a business in case the company does it for the first time. Before starting with the implementation, the top management must ensure a total understanding and acceptance of the new system even if it implies changing some of the management. The efforts must be focused on education and training about lean philosophy.

**Plan** is the most complex stage, implying analysis of the environment with the old good SWOT matrix or EFAS and IFAS matrices. The next important step is writing/revising the mission, vision, values and policies. Corporate values are complemented with lean values encouraging lean behavior: trust, respect, openness, consistency, fairness, objectivity and listening (Hines, 2008). Policies give clear directions on the work within the organization aligned with the lean principles.

X-matrix (short form X-M, Table 2) is the main document representing the implementation of strategy based on Hoshin Kanri. It is set up in order to display the alignment and interdependence of all implementation steps of strategy in a very concise way. The X-M is one of the variations of A3 plans known as the communication and presentation tool because of the clear and standard form and logical connections. The reading of the X-matrix starts with the strategic objectives and clockwise transforms to annual objectives. Furthermore, the additional step is to transform annual objectives to activities/projects for improvement (first level) and these to KPI indicators. Transformation is accomplished as an interconnection of all plans, projects and activities and is followed by the exact name of the people in charge, role, timetable and status. There are no universal rules to the structure, definitions or names of certain elements of X-M, as they are adjusted to the features of a company.

The principle of BSC was used in defining the KPI's of the business. The perspectives of BSC are marked in brackets before the name of the indicator. When implementing lean, at least one indicator has to be established at the strategic level to measure the success of the implementation or the degree of maturity of lean within the business.

The coordination of plans, activities, projects, indicators and goals between organizational levels is done through catchball. **Do** is the implementation phase. All the employees are included in the implementation of the strategy. This is achieved through a detailed description of activities, projects and tasks cascading to the lowest levels and effective communication. Activities for improvements and projects are developed into action and project plans. Implementation of measurement systems is important for the actual conducting of activities and phase C – check. Effective communication with all employees is key in the implementation phase. They need to understand their role in strategy implementation.

**Check** is the stage where the realization of activities and strategic plans is checked on all organizational levels, systematically and as scheduled. The analyzed business will check the necessary realizations on a weekly, monthly, quarterly and finally, annually basis in a uniform and standardized report.





**Act-** depending of the reporting results, two actions can be taken; if the goals are achieved, the business processes are recognized as the standard in future practice, in case that the results are not accomplished, corrective activities are suggested. The act phase is about solving problems and learning from both success and failure. Lean has a set of tools to help reach the root of the problem, e.g. Pareto principle, Ishikawa diagram and to point out the solution e.g. DMAIC methods (define, measure, analyze, improve and control mostly used with Six Sigma). Another path is to adjust the goal according to more realistic expectations. No matter the level of operation, complexity or industry - the principle is PDCA.

## **The insights into the process of Hoshin Kanri implementation**

Developing Hoshin Kanri in a company implies a complex system of steps, procedures and processes. It requires knowledge about lean philosophy, unconditional support of the top management and the participation of all employees in the company. Western approach to strategic management has shown a lot of changes in direction towards flexibility, employee participation in planning, less formal ways and shorter periods of strategic planning. When viewed in detail, it is very close to the nature the Hoshin Kanri approach to strategy. Actually, all the attempts of strategic managers in the western world are founded on accepting modern thought of strategy-as-practice, dynamic capabilities of managers, knowledge management, the particular elements that can also be found in Hoshin Kanri. The purpose of this paper is to, based on the work of da Silveira et al. (da Silveira et al., 2017), systemize, for western managers, a set of universally applicable guiding principles, or guidelines for Hoshin Kanri initiatives. Hoshin Kanri may be regarded as complex, but it is not more complex than any other western strategic management tools.

The examples of Hoshin Kanri implementations present in the literature (Serdar Asan & Tanyaş, 2007; Tennant & Roberts, 2001; B. Witcher & Butterworth, 1999) show that the procedures in the implementation, the processes followed and the lean principles are common to all, but each of the examples developed their own specific way in line with their needs, requirements and capabilities.

After closely reviewing the examples in the literature and participating in and creating our own Hoshin Kanri example in a company, we conclude that there are three essential features present in the process of developing Hoshin Kanri: transparency, flexibility and communication – the wishful characteristics managers look for in times of extreme business dynamics.

**Transparency:** it is important not to have hidden information. Sometimes front-line managers have more recent and updated information than top management and the top management has more information about the wider context or different competitor than the employees. X-matrix brings everybody on the same page about the plan, implementation, results and improvements. In this way, all employees are invited to participate in creating plans for the company and may suggest improvements. Additionally, it allows the culture in which there is no grouping of the people that “think” and people that “work”. The focus is on the business process, customer satisfaction and results and not on the informal social relations or privileged employees or any situation of asymmetric information. The ultimate goal is to have full information about the strategic objectives, activities, measures, responsible employees and results shared among all employees. The tool that we used and propose is X-matrix.

**Flexibility:** plans are subject to change. They should be adjusted to new trends, new opportunities and the correction of existing plans if found unrealistic. Continuous monitoring of the situation on the market and good channels of communication will allow for the changes to happen sooner rather than later. The cycle of plan, implement, check and act on results has the goal to detect unsuccessful processes and improve them in the next cycle. Learning from experience is based on both success and failure. The ultimate goal is being flexible and adaptable in modern business world. The tool we used and propose is PDCA.

**Communication:** the involvement of managers from different hierarchical level enables the provision of useful information from different sources, both outside and inside the company. Iterations of communication between managers from different hierarchical level, make it possible to implement the horizontal approach in addition to the top-down and the bottom-up approach. Ideas are exchanged, expectations and plans explained, leaving less space for misunderstandings. The ultimate goal is to create a culture of trust, caring, knowledge sharing and to understand the context and business and to be on the same page when working on plans for future. The tool we used and propose is catchball.

Our understanding is quite similar to the research of da Silveira et al. (Giordani da Silveira et al., 2017), who recognizes content based essences of Hoshin Kanri; organizational structure, capabilities, focus, alignment, integration and review. They interviewed Hoshin Kanri experts, trying to point out the culturally inherited elements of the Japanese culture within the Hoshin Kanri approach and tried to explain these to western management.

Maybe the most distinguished framework in explaining the structure of Hoshin Kanri is the Witcher's FAIR framework. Witcher (B. J. Witcher, 2003) conducted extensive research and came to the FAIR framework which stands for focus, alignment, integration and review. The congest and easy to remember acronym synthesizes the crucial elements of Hoshin Kanri.

Yang and Yeh (Yang, Yeh, 2009 as cited by Nicholas, 2016) compared it with the BSC and traditional strategic planning. This study, alongside Nicholas (Nicholas, 2016) found Hoshin Kanri to be unique in terms of workforce involvement, catchball, and attention to daily work and performance. And this is exactly what makes it dynamic and competitive. Another supporting study is that by Mothersell et al. (Mothersell et al. 2008 as cited by Nicolas, 2016) who found two additional features unique to Hoshin Kanri – process management (connecting processes to goals/targets) and employee development (continuous employee learning and delegating authority).

## **Conclusion**

The main conclusion of this paper is that Hoshin Kanri is a strategic management tool that can be of a great value for western management. As perceived as culturally embedded, there could be some insights gained by experienced western management that could be used in order to successfully implement Hoshin Kanri in western business environment. The insights into the content implies example of using PDCA, catchball and X-matrix. The insights into the process implies taking care of the three soft principles; transparency, flexibility and communication.

This paper has several limitations. The first one is the limited methodological design. This paper is a combination of both personal experience and a theoretical conceptual approach. Any further paper should be focused either on qualitative or quantitative design in order to get more in-depth insights. This might be done by analyzing a larger sample of existing experience of Croatian managers or it might be a theoretical paper trying to capture some of the theoretical aspects of Hoshin Kanri. The second limitation is the simplification of the example of the implementation of the Hoshin Kanri approach. An extensive implementation does take a lot of time, training, iterations and methods that are not presented in this paper. It is a resource-demanding process and the results could be perceived as simple, an easy table with logical strategic activities. The experience of creating it is telling the other part of the story. The ultimate goal is to have a result that looks simple and is easy to understand and implement.

The Hoshin Kanri might seem very culturally embedded in the Japanese culture but the proposed research and papers have been trying to explain, discuss and educate other cultures about the benefits of Hoshin Kanri in developing strategies. Knowing that between 50 and 90% of the strategies do not get implemented (Candido & Santos, 2015), Hoshin Kanri could be one of the ways to make a strategy more competitive in the implementation phase and in this manner make this percentage of failure much lower.

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